

# Bacterial Meningitis

Brittany Alston

PGY 1

12/5/14

A 6 year old girl presents to the ED with fever for 4 days. She has vomited for the past 2 days and complains of headache as well. Her mother notes that she has been quite irritable with a poor appetite. Her temperature is 38.8°C, HR 120, BP 100/65, RR 28, and O2 sat 98%. Exam is notable for unilateral papilledema and generalized myalgias. Brudzinski and Kernig signs are both negative.

What is the best next step in management?

- A. Lumbar puncture and start empiric antibiotics
- B. Stat CBC and IV fluids
- C. Blood culture and start empiric antibiotics
- D. CT scan of brain followed by lumbar puncture

A 6 year old girl presents to the ED with fever for 4 days. She has vomited for the past 2 days and complains of headache as well. Her mother notes that she has been quite irritable with a poor appetite. Her temperature is 38.8°C, HR 120, BP 100/65, RR 28, and O2 sat 98%. Exam is notable for unilateral papilledema and generalized myalgias. Brudzinski and Kernig signs are both negative.

What is the best next step in management?

- A. Lumbar puncture and start empiric antibiotics
- B. Stat CBC and IV fluids
- C. Blood culture and start empiric antibiotics**
- D. CT scan of brain followed by lumbar puncture

# EXPLANATION

- Overall, about 10-20% of children with bacterial meningitis have focal neurologic signs.
- It is important to note that the absence of Kernig and Brudzinski signs does not exclude meningitis.
- Patients who have a more protracted subacute course and become ill over a 4-7 day period should also be evaluated for signs of increased ICP and focal neurologic deficits. Unilateral headache, papilledema, and other signs of increased ICP suggest a focal lesion such as a brain or epidural abscess, or subdural empyema. Under these circumstances, antibiotic therapy should be initiated before LP and CT scanning.

# Explanation of wrong answers...

- Answer A is incorrect because the patient shows signs of ICP. Do not perform LP next as it can precipitate brain herniation.
- Answer B is incorrect because the patient appears hemodynamically stable and fluid resuscitation is not an immediate concern.
- Answer D is incorrect because starting empiric antibiotics is the priority. Do not delay treatment by getting a CT and LP first.

# References

- Nelson Textbook of Pediatrics 19th Edition 2011
- Meningitis. *Pediatrics in Review*. 2008; 29; 417.

An ill-appearing 19 year old college student is brought into the ED by her mother after recent onset of fever, myalgias, and truncal petechial rash. On exam, the patient appears confused but complains of neck pain. Within thirty minutes, the patient deteriorates rapidly, requiring fluid resuscitation and intubation.

Which close contact of this patient does NOT require rifampin prophylaxis?

- A. The patient's boyfriend
- B. The nurse who triaged the patient
- C. The physician who performed the intubation
- D. Students in the patient's dormitory

An ill-appearing 19 year old college student is brought into the ED by her mother after recent onset of fever, myalgias, and truncal petechial rash. On exam, the patient appears confused but complains of neck pain. Within thirty minutes, the patient deteriorates rapidly, requiring fluid resuscitation and intubation.

Which close contact of this patient does NOT require rifampin prophylaxis?

- A. The patient's boyfriend
- B. The nurse who triaged the patient
- C. The physician who performed the intubation
- D. Students in the patient's dormitory



# EXPLANATION

- *Neisseria meningitidis* is the leading cause of bacterial meningitis in children and young adults in the United States, with an overall mortality rate of 13 percent.
- Chemoprophylaxis is indicated in close contacts of patients with meningococcal infection and should be given as early as possible following the exposure. It is most effective when given within 24 hours of exposure. Although "close contact" has not been clearly defined, it generally refers to individuals who have had prolonged (>8 hours) contact while in close proximity (<3 ft) to the patient or who have been directly exposed to the patient's oral secretions during the seven days before the onset of the patient's symptoms and until 24 hours after initiation of appropriate antibiotic therapy. Close contacts include household, day care center, and nursery school contacts, as well as individuals with exposure to oral secretions (i.e. intimate kissing, anyone involved with intubation, suctioning, or mouth-to-mouth resuscitation.)

# Explanation of wrong answers...

- The patient's boyfriend and peers in the dormitory would be considered individuals who have had prolonged contact with the patient.
- The patient's doctor who performed the intubation would have been exposed to oral secretions.
- Prophylaxis is **not** indicated if exposure to the index case is brief. This includes the majority of healthcare workers unless there is direct exposure to respiratory secretions. In this case, the nurse's brief interaction with the patient would not necessitate treatment with rifampin.

# References

- Textbook of Pediatric Emergency Medicine 6th Edition 2010
- “Clinical manifestations of meningococcal infection.”  
UpToDate. Nov. 2014.